



MS4
£4.00

GCE MARKING SCHEME

**BIOLOGY/HUMAN BIOLOGY (NEW)
AS/Advanced**

SUMMER 2009

INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2009 examination in GCE BIOLOGY/HUMAN BIOLOGY (NEW). They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

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AS UNIT BY1

Question	Answers/Explanatory Notes	Marks Available
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1. (a)

Structure	Plant cell	Animal Cell
Centrioles	X	/
Mitochondria	/	/
Chloroplasts	/	X

(1 for each column)

[2]

(b) (i) Correct diagram showing double membrane with Inner membrane folded. [1]

Any 2 labels from matrix, crista, intermembrane space, double membrane, stalked particles, DNA, ribosomes. [2]

(ii) Aerobic respiration / ATP production (not: respiration) [1]

(iii) Muscle cell / liver cell/sperm/pancreas/epithelial cell from small intestine/neurone/companion cell. [1]

(iv) High requirement for energy for contraction/sperm movement / for chemical activity/high metabolic activity/active transport. (not: exercise) [1]

[Total 8 Marks]

2. (a) A – interphase (not: resting phase).

B – mitosis (not: cell division).

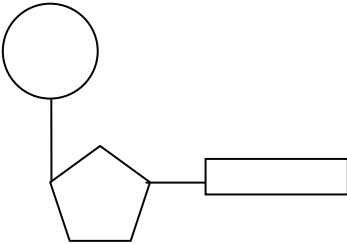
C – prophase. [3]

(b) (i) Metaphase - both chromosomes on equator, chromatids either side. [1]

Anaphase – 4 V or U shaped, centromere pointing towards centrioles. [1]

(ii) Nucleotide synthesis, replication of DNA, replication of organelles, protein synthesis, growth, synthesis ATP.AVP. (Any 2) [2]

[Total 7 marks]

Question	Answers/Explanatory Notes	Marks Available
3. (a) (i)	 <p>Pentose shown as pentagon and labelled, sugar/ribose/deoxyribose [1] Phosphate on C5 and labelled, phosphate/phosphoric acid [1] Base on C1 and labelled, (nitrogenous) base/named base [1]</p> <p>(ii) The pentose is ribose in RNA deoxyribose in DNA; [1] (allow: clear description of extra oxygen e.g. sugar in DNA contains one less oxygen <u>atom</u> than sugar in RNA)) the base thymine is only found in DNA / uracil in RNA. [1] (not: ref. helix/strands/uracil and thymine) Comparison needed</p> <p>(b) (i) (Alternating) sugar / pentose or deoxyribose and phosphate. [1]</p> <p>(ii) Adenine with thymine. Cytosine with guanine. [2] (not: abbreviations) Correct spelling thymine/cytosine.</p> <p>(iii) Hydrogen. (not: H) [1]</p>	
[Total 9 marks]		

Question	Answers/Explanatory Notes	Marks Available
4.	(a) (i) Fluid Mosaic.	[1]
	(ii) Head labelled hydrophilic AND tail labelled hydrophobic.	[1]
	(b) Secondary structure is folding of polypeptide chain / ref. to α helix or β pleated sheet; held by hydrogen bonds; tertiary is folding of α helix or secondary structure / correct reference to specific 3D shape; held by bonds between R groups / name at least 2 from covalent, disulphide, ionic, salt bridges, hydrophobic, hydrogen, van der Waals. (Any 4)	[4]
	(c) (i) Charged groups will associate with (hydrophilic) heads of lipids / layer; / hydrophobic inside hydrophilic outside. Uncharged groups will associate with (hydrophobic) tails.	[2]
	(ii) Will associate with heads only / attach to outside or inside of the membrane / correct use of extrinsic or would be surface protein. (not: would not be in the membrane unqual.)	[1]
		[Total 9 marks]

Question	Answers/Explanatory Notes	Marks Available
6.	<p>(a)</p> <p>(i) Showing, 1 O and 2 H s removed. Elimination of water, stated. Molecules joined by oxygen bridge. [3]</p> <p>(ii) Maltose (not: disaccharide). [1]</p> <p>(iii) Water. [1]</p> <p>(iv) Condensation. [1]</p> <p>(b)</p> <p>(i) Joining together sub units / monomers /repeating units/ residues (to make a larger molecule) (not: joining molecules into a chain/ specific example) [1]</p> <p>(ii) Correct axes – iron sulphate concentrate on horizontal, both labelled and units given. Suitable scale using at least half available space; plots visible and clear line correct shape. (not: extrapolation/line of best fit) [3]</p> <p>(iii) 0.9mM (allow: between 0.7 and 0.9mM). [1]</p> <p>(iv) $60 - 5.2 = 54.8 / 60 \times 100 = 91.3(\%)$ (allow: 91) (2 for correct answer 1 for correct working but wrong answer.) [2]</p> <p>(v) Inhibitor competes with substrate (to bind with active site); inhibitor binds to/fits into active site; with inhibitor bound substrate is unable to bind/less E-S complexes; inhibitor same/complementary shape as substrate; the greater the concentration of substrate the less inhibition / ra / owtte (Any 3) [3]</p> <p>(vi) (Add iron sulphate to toothpaste / mouthwash / sugary drinks.) to prevent formation of plaque / tooth decay. [1]</p>	

[Total 17 marks]

Question	Answers/Explanatory Notes	Marks Available
7. (a)	A. Enclosed by cell wall.	[1]
	B. Presence of cell/plasma membrane.	[1]
	photosynthetic membrane.	[1]
	D. DNA in tangled nucleoid / single chromosome / loop (not if looks like plasmid)	[1]
	E. Additional rings of DNA – plasmids / food reserve granules.	[1]
	F. Infoldings of cell membranes – mesosome.	[1]
	G. Ribosomes in cytoplasm.	[1]
	H. Ribosomes (very) much larger in eukaryote/70S.	[1]
	I. Prokaryote (1 -10 μm), eukaryote (10 – 100 μm).	[1]
	J. Cell wall of eukaryote made of cellulose/chitin and Prokaryote wall murein / peptidoglycan.	[1]
	K. Mitochondria in eukaryotes and mesosomes in prokaryotes	[1]
	L. Eukaryotes have nucleus / nuclear membrane / more genetic information.	[1]
	M. (Containing several paired) chromosomes / linear Chromosomes/DNA.	[1]
	N Eukaryote compartmentalised by membranes / contains organelles or 2 examples.	[1]
	O. Eukaryote chromosomes have protein / histones (half marks max. if pro and eu wrong way round or no diagram.)	[1]

Diagram 5 max, comparison 6 max. If wrong diagram (i.e. any eukaryote features) no marks but allow consequential error i.e. prokaryote and eukaryote comparison reversed.

[Total 10 marks]

Question	Answers/Explanatory Notes	Marks Available
(b)	A. Enzyme molecules that are fixed / bound / Trapped (not: immobilised/do not move)	[1]
	B. to an inert Matrix/alginate bead.	[1]
	C. They are more stable at higher temperatures (therefore reaction rates may be faster by using higher temps.)	[1]
	D. They can tolerate wider range of pH.	[1]
	E. They are more easily recovered for re-use/separated from product.	[1]
	F. Several enzymes with different pH or temp. optima may be used at one time.	[1]
	G. Reaction can be more easily controlled by adding or removing enzymes.	[1]
	H. They are specific so can select one type of molecule in a mixture.	[1]
	I. So can be used for rapid detection of biologically important molecules.	[1]
	J. They can also accurately measure the quantities present / are sensitive.	[1]
	K. Used in medical diagnosis / named condition eg diabetes.	[1]
	L. And environmental monitoring,	[1]
	M. Description of mechanism, some use a transducer to generate an electrical impulse that can be measured with a meter.	[1]
	N. eg. Blood sugar meter as used by diabetics / AVP.	[1]
	O. AVP/ easier to make pure product (not contaminated by enzyme.)	

[Total 10 marks]

AS UNIT BY2

Question	Answers/Explanatory Notes	Marks Available
1.	(a) <i>Lugworm</i> segmented body; septa; fluid filled body cavity; hydrostatic skeleton; primitive brain and nervous systems; thin permeable skin; closed circulatory system; (not: coelom) (Max 2)	[2]
	<i>Frog</i> Phylum Chordata / chordate, accept vertebrate;	[1]
	Class Amphibia;	[1]
	<i>Locust</i> Phylum Arthropoda / arthropod;	[1]
	class Insecta / insect;	[1]
	Features of phylum a body divided into segments a body further divided into head, thorax and abdomen/three sections a well developed brain a hard outer exoskeleton (made of chitin) (paired) jointed legs (not: ref. 6) an open circulatory system/haemocoel a cavity which surrounds the body organs (Max 2)	[2]
	<i>Field mushroom</i> Kingdom fungi;	[1]
	(b) <i>Schistocerca</i> .	[1]

[10 marks]

Question	Answers/Explanatory Notes	Marks Available
2.	(a)	
	(i) 4	[1]
	(ii) 4 (%)	[1]
	(b) small drop of partial pressure/concentration of oxygen (not: low pp); large amount of oxygen supplied/dissociates more easily; tissues can respire aerobically; aerobic respiration far more efficient than anaerobic / prevents lactic acid production. (Max 2)	[2]
	(c)	
	(i) (respiring) muscles / liver/heart/placenta (not: lung tissue);	[1]
	(ii) more oxygen released/affinity of haemoglobin for oxygen falls; at same partial pressure/concentration of oxygen; aerobic respiration; (Max 2)	[2]
	(d)	
	(i) Greater/higher affinity for oxygen; absorbs oxygen from mother; becomes (fully) saturated at low pp oxygen; (Max 2)	[2]
	(ii) Lives in an environment with low partial pressures/oxygen deficient; allows haemoglobin to become (fully) saturated at these low partial pressures/quoted figures; accept reverse argument; /Haemoglobin has high affinity for oxygen	[2]

Question	Answers/Explanatory Notes	Marks Available
3.	(a)	
	A Xylem vessel (element / cell);	[1]
	Transport water / mineral ions or salts (allow: support); (not: nutrients)	[1]
	B Sieve tube (element / cell); (not: phloem)	[1]
	Transport of organic materials / sugars/ products of photosynthesis/ amino acids/sucrose (not: glucose)	[1]
	C Companion (cell);	[1]
	Makes proteins / ATP/ release energy (for sieve tube cell); (not: make/produce energy)	[1]
	(b) Support/strengthen/ prevents vessel collapsing when water sucked along it;	
	waterproofing stops water entering or leaving;	
	adhesion of water/hydrophilic lining (not: impermeable unqual) aids movement of water upwards	
	2 linked marks	[2]
	(c) Casparian strip; symplast; cohesion; adhesion; hydrophilic;	[5]

Question	Answers/Explanatory Notes	Marks Available
4.	(a) Thin/short diffusion pathway; permeable; moist; has a conc. gradient; (Max 3)(not: porous/ref capillary network/ ref flat shape)	[3]
	(b) (i) label line touching end of tracheole where they touch muscle (not: just letter);	[1]
	(ii) Fast (oxygen 200,000 x faster than blood, carbon dioxide 10,000 x); No respiratory pigment/haemoglobin required;reduced water loss; oxygen supplied directly to tissues/no transport system needed: (Max 2) (not: large surface area unequal)	[2]
	(iii) $\frac{\text{Difference}}{\text{Original}} \times 100$	[1]
	Answer 50(%);	[1]
	(c) Intercostal muscles contract; ribs upwards and outward; diaphragm contracts/flattens; volume increases; pressure decreases; Below atmospheric pressure (Max 4)	[4]
	(d) (i) Water contains <u>less</u> oxygen than air; pp oxygen varies with temperature; diffusion rates much slower; Dense/viscous medium more difficult to pump/move; (Max 2)	[2]
	(ii) <i>Parallel flow</i> , water and blood in gills flow in same direction;	[1]
	<i>Counter current</i> , water and blood flow in opposite directions;	[1]
	Concentration gradient maintained over entire distance travelled by water over gills;	[1]

Question	Answers/Explanatory Notes	Marks Available
5.	<p>(a) Advantages</p> <p>Variation/genetically different;</p> <p>allows development of a resistant stage in life cycle;</p> <p>seeds, spores, larvae allow dispersal</p> <p>(Max 2)</p> <p>Disadvantages</p> <p>Need two individuals/parents; a slow form of reproduction / asexual much faster;</p> <p>some variations not as successful as parent type/mutations more common/inherit genetic disorder;</p> <p>need to get gametes together; ref large numbers</p> <p>(Max 2) (not: ref disease/complex/less successful unequal)</p>	<p>[2]</p> <p>[2]</p>
	<p>(b) Less gametes wasted/increased chance of fertilisation:</p> <p>gametes become independent of water;</p> <p>fertilised egg can be enclosed in a protective layer; allows fertilised egg to develop inside body of female (where it is nourished and protected);</p> <p>gametes do not dehydrate;</p> <p>(Max 2)</p>	<p>[2]</p>
	<p>(c) Life cycle rapid; Food store in seed allows rapid growth of embryo; food store enables seed to survive for long periods of time/ref dormancy;</p> <p>protection by testa/resistant outer layer;</p> <p>leaf fall recycling of nutrients; no need for water for fertilisation; ref link with animals or wind for pollination; ref dispersal e.g. fruit; large numbers of seeds produced.</p> <p>(Max 3) (not: ref reproduction asexual and sexual)</p>	<p>[3]</p>

Question	Answers/Explanatory Notes	Marks Available
6. (a)	<i>Darwin</i>	
	A. Darwin recognised that species did change/ put forward a theory as to how they changed;	
	B. mutation qualified;	
	C. Overproduction;	
	D. Numbers remain constant/high mortality rate/struggle for survival;	
	E. Variation e.g. beak size or shape/rats/moths;	
	F. competition (for limited food source);	
	G. Individuals with a beneficial variation survive / survival of fittest or converse;	
	H. pass on beneficial characteristic;	
	I. Repeats generation after generation; (not: over a long time)	
	J. details of beak adaptation, seed, insects, fruit etc;	
	K. Natural selection;	
	L. adaptive radiation qual;	
	M. morphologically similar and to mainland form/common ancestor;	
	N. similarities of proteins/enzymes;	
	O. similarities of DNA/genes;	
	P.+ Q AVP x2 e.g. Fossil evidence, living intermediate forms, pentadactyl limb;	
	(Any 10)	

Question	Answers/Explanatory Notes	Marks Available
(b)	<i>Adaptions to diet.</i>	
A.	Small flat top incisors / horny pad;	
B.	Canines absent / small indistinguishable front incisors;	
C.	Teeth continuously growing or reverse argument;	
D.	Carnivores, canines, large (and backward pointing, killing and holding prey);	
E.	Herbivore cheek teeth large surface area for grinding/ interlock, W M arrangement;	
F.	Carnassial qual;	
G.	Sharp cutting edges on teeth	
H.	Diastema qual, manipulation of food;	
I.	First three chambers in 'stomach' modified oesophagus/ 4 chambers; (not: 4 stomachs)	
J.	large volume/longer gut;	
K.	Symbiotic / commensal bacterial/mutualism;	
L.	Ref anaerobic conditions;	
M.	Ref reverse peristalsis/regurgitate / chewing cud, qual;	
N.	cellulose digestion/cellulose by bacteria;	
O. + P	AVP X2 e.g. ref jaw articulation Ref. urea in saliva to provide nitrogen, thick keratinized lining, ref protein digestion only in true stomach, bacteria used as food source.	
(Any 10) (not: reverse arguments unless specified)		

AS UNIT HB2

Question	Answers/Explanatory Notes	Marks Available
1.	(a) (i) (Large) (permanent) vacuole	[1]
	(ii) No membrane-bound nucleus /DNA free (in cytoplasm) has capsule / has slime layer (not: organelles/ DNA naked)	[1]
	(b) (i) Inhibits the enzymes that are involved in the formation of the cell wall / Stops the (peptidoglycan) <u>chains</u> linking up / blocks cross-linking of the cell wall structure (not: destroys murein)	[1]
	(ii) (As the wall weakens) the cell takes up water (and swells) / (the cell wall is unable to withstand the pressure) and the cell bursts.	[2]
	(iii) Human cells do not have cell walls.	[1]
	[Total 6 marks]	

Question	Answers/Explanatory Notes	Marks Available
2.	(a)	
	(i) Forms a barrier between the stomach lining and gastric juice / to protect the stomach wall/lining.	[1]
	(ii) Lubricates (the food to assist in its movement within the Stomach).	[1]
	(b)	
	(i) Pepsinogen.	[1]
	(ii) Prevents the enzyme from damaging the stomach tissues / Cells in the wall/ avoids autolysis.	[1]
	(c)	
	(i) Oxyntic (cell).	[1]
	(ii) Activates pepsinogen (to pepsin); provides optimum pH for Pepsin/enzymes; neutralises alkaline saliva; kills bacteria. (Any two)	[2]
	(d)	
	(i) (Infection with) bacteria (<i>Helicobacter pylori</i>) / long term use of anti-inflammatory drugs or aspirin.	[1]
	(ii) the mucus lining is damaged Which allows acid to damage the stomach wall and causes an increase in the production of acid; (not: acids wear away stomach wall)	[2]
	(iii) Eating spicy food / drinking caffeine, alcohol / stress / (smoking affects healing process).	[1]
	(iv) Antibiotics (to eliminate <i>H.pylori</i> / drugs to reduce stomach acid / drugs to protect stomach lining. (not: antacid tablets)	[1]

[Total 12 marks]

Question	Answers/Explanatory Notes	Marks Available
3.	(a) An organism that lives (on or) in another organism / called the host; (not: lives off another organism)	[1]
	(obtains nourishment) <u>at the expense of/harms the host.</u>	[1]
(b)	(i) Pig.	[1]
	(ii) Pig becomes infected if it feeds in drainage channels / or eq. contaminated by human faeces/feeding on infected faeces.	[1]
	(iii) By eating under-cooked infected/contaminated pork. (not: meat)	[1]
(c)	(i) Suckers / hooks / scolex.	[1]
	(ii) A thick cuticle; To resist enzyme action or immune response (not: ref acid)	[2]
(d)	To overcome the problem of transfer to another host / to increase the chance of some of the offspring reaching a new host. (not: so some eggs may survive)	[1]

[Total 9 marks]

Question	Answers/Explanatory Notes	Marks Available
4.	<p>(a) (i) A substance or molecule that stimulates / elicits the production of antibodies / immune response. (pathogen / non-self cell / molecule recognised as foreign to the body may be used in the place of substance or molecule).</p> <p>(ii) (Protein / immunoglobulin) produced in response to an antigen / specific to a particular antigen.(not: destroys antigen)</p>	<p>[1]</p> <p>[1]</p>
	<p>(b) (i) There is a delay / latent period before antibodies are produced in the primary response but in the secondary response they are produced immediately / secondary response is faster than primary response. Larger quantity of antibodies produced in the secondary response; Antibodies remain in the blood for longer during the secondary response. (Any two, comparison needed)</p> <p>(ii) Presence of memory cells (cause rapid response) / many memory cells so greater number of antibodies possible.</p>	<p>[2]</p> <p>[1]</p>
	<p>(c) (i) Boys could act as a reservoir of infection (<u>not</u> 'boys can get it' / boys are carriers).</p> <p>(ii) Organism causing smallpox has low mutation rate/ influenza virus mutates frequently; vaccine only effective against a particular strain / will not give protection against all variants/ many different strains of influenza virus / different antigenic types;</p>	<p>[1]</p> <p>[2]</p>
		[Total 8 marks]

Question	Answers/Explanatory Notes	Marks Available														
5.	<p>(a) (i) A group of organisms that interbreed; to produce fertile offspring.</p> <p>(That share a large number of common characteristics.)</p> <p>(ii)</p> <table><tr><td>Kingdom</td><td>Animalia</td></tr><tr><td>Phylum</td><td>Chordata (allow chordates)</td></tr><tr><td>Class</td><td>Mammalia (allow: mammals)</td></tr><tr><td>Order</td><td>Primates</td></tr><tr><td>Family</td><td>Hominidae</td></tr><tr><td>Genus</td><td><i>Homo</i></td></tr><tr><td>Species</td><td><i>sapiens</i></td></tr></table> <p>(correct spelling needed, not: vertebrates)</p>	Kingdom	Animalia	Phylum	Chordata (allow chordates)	Class	Mammalia (allow: mammals)	Order	Primates	Family	Hominidae	Genus	<i>Homo</i>	Species	<i>sapiens</i>	<p>[1]</p> <p>[1]</p> <p>[6]</p>
Kingdom	Animalia															
Phylum	Chordata (allow chordates)															
Class	Mammalia (allow: mammals)															
Order	Primates															
Family	Hominidae															
Genus	<i>Homo</i>															
Species	<i>sapiens</i>															
(b)	<p>(i) The protein, albumin, is made up of amino acids, reflects differences / similarities in genes DNA; possible to compare sequence of bases in different organisms.</p> <p>(Any two)</p> <p>(ii) I gorilla, orang-utan, gibbon;</p> <p>The more antibody precipitated the closer the relationship / use of comparative figures.</p> <p>II Antibody has a specific binding site / complementary shape (for human albumin), which is an antigen; Other primates must have similar albumin but have some base / DNA differences; so they are not a perfect match to the antibody.</p>	<p>[2]</p> <p>[2]</p> <p>[2]</p>														
[Total 14 marks]																

Question	Answers/Explanatory Notes	Marks Available
6.	(a)	
	(i) 0.4 seconds/s.	[1]
	(ii) Impulse spreading through ventricles / Purkyne tissue/bundle of His.	[1]
	(iii) Contraction of atria/atrial systole.	[1]
	(iv) (Ventricles) contract.	[1]
	(v) Relaxation of ventricles/ventricular diastole.	[1]

(b)

Patient	Heart malfunction	Diagnosis
A	Impulses not passing through/ damaged AVN/ bundle of His / Purkyne tissue.	Heart block.
B	Ventricular fibrillation.	Heart attack / myocardial Infarction/cardiac arrest.

[4]

(ii) Defibrillation/electrical shock to the heart.

Clot busting drugs /streptokinase; aspirin; morphine.

[2]

[Total 11 marks]

Question	Answers/Explanatory Notes	Marks Available
7.	(a)	
	A. The intercostal muscles contract.	[1]
	B. Causing the ribs to move up and out.	[1]
	C. (At the same time) The diaphragm contracts and flattens.	[1]
	D. The volume of the thorax increases.	[1]
	E. The pressure in the thorax decreases.	[1]
	F. Outside pressure is greater than pressure in lungs so air rushes in.	[1]
	(Any 4 from 6)	
	G. Cigarette smoke contains tar and nicotine.	[1]
	H. Tar stimulates cells (goblet) in epithelium to overproduce mucus.	[1]
	I. Ciliated cells/cilia may be destroyed.	[1]
	J. Resulting in build-up of mucus.	[1]
	K. Bacteria / viruses multiply resulting in (chronic) bronchitis.	[1]
	L. Carcinogens / cancer causing chemicals in tar.	[1]
	M. Cause uncontrolled cell division / mitosis	[1]
	N. resulting in the formation of tumours/lung cancer.	[1]
	O. AVP e.g. Carbon monoxide combines more readily with haemoglobin than does oxygen causing a reduction in the level of oxygen in the blood/emphysema qual/COPD qual.	[1]
	(Any 6 from 9)	
		[Total 10 marks]

Question	Answers/Explanatory Notes	Marks Available
7. (b)	A. Highest pressure is in the aorta / arteries / closest to the heart.	[1]
	B. Where there is a rhythmic rise and fall / pulse.	[1]
	C. Progressive drop from arteries to arterioles to capillaries / progressive drop with increased distance from heart.	[1]
	D. Pressure in veins stays low.	[1]
	(Marks A-E may be awarded on annotated graph)	
	E. Rise and fall in aorta or arteries corresponds to contraction of left ventricle.	[1]
	F. Effect depends on whether arterioles are dilated or constricted / ref to elastic recoil in artery walls / maintains pressure.	[1]
	G. Pressure in veins / away from heart is non-rhythmic because influence of ventricles has been dissipated.	[1]
	(Any 5 marks from 7)	
	H. Hypertension exists when there is a persistently high diastolic pressure at rest.	[1]
	I. Diastolic pressure gives an indication of the resistance of the arteries to the flow of blood.	[1]
	J. A healthy artery has a smooth lining.	[1]
	K. An unhealthy artery has yellow, fatty streaks/atheroma under the endothelium / atherosclerosis.	[1]
	L. The fat deposit lines the artery.	[1]
	M. It is built up from cholesterol taken up from the blood. (not: cholesterol lines walls)	[1]
	N. The lumen becomes narrower / lessens elasticity of artery wall.	[1]
	O. There is a resistance to blood flow.	[1]

(Any 5 marks from 8)

[Total 10 marks]



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